ORDER NO. AVS9806110C8

Service Manual

CCTV Camera

WV-BP330 Series

(Lens : option)

SPECIFICATIONS

Pick-up Device :	752 (H) x 582 (V) pixels, Interline Transfer CCD
Scanning Area :	4.9 (H) x 3.7 (V) mm (Equivalent to scanning area of 1/3" pick-up tube)
Synchronization :	Internal, External, Line-locked or Multiplexed vertical drive (VD2) selectable
Scanning System :	2 : 1 interlace
Scanning :	625 lines / 50 fields / 25 frames
Horizontal :	15.625 kHz
Vertical :	50.00 Hz
Horizontal Resolution :	570 lines
Video Output :	1.0 V[p-p] CCIR composite 75 Ω / BNC connector
Signal-to-Noise Ratio :	50 dB (AGC OFF)
Electronic Light Control :	Equivalent to continuous variable shutter speed between 1/50 s and 1/10 000 s
Minimum Illumination :	0.08 lx (0.008 footcandle) at F1.4, AGC ON
Gain Control :	AGC ON (+18 dB) or OFF selectable
Lens Mount :	C-mount or CS-mount selectable
Ambient Operating Temperature :	–10 °C - +50 °C (14 °F - 122 °F)
Ambient Operating Humidity :	Less than 90 %
Power Source and	WV-BP330 : 220-240V AC 50 Hz, 4.5W
Power Consumption :	WV-BP332E : 12V DC, 250 mA
	WV-BP334E : 24V AC 50 Hz, 3.5W
Dimensions (without lens) :	67 (W) x 55 (H) x 123 (D) mm [2-5/8" (W) x 2-3/16" (H) x 4-13/16" (D)]
Weights (without lens) :	WV-BP330 : 0.635 kg (1.40 lbs)
	WV-BP332E : 0.445 kg (0.98 lbs)
	WV-BP334E : 0.470 kg (1.04 lbs)

Weights and dimensions indicated are approximate.
Specifications are subject to change without notice.

STANDARD ACCESSORIES

Body Cap .....1 pc.
ALC Lens Connector (YFE4191J100) .....1 pc.

Panasonic

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

This symbol warns the user that uninsulated voltage within the unit may have sufficient magnitude to cause electric shock. Therefore, it is dangerous to make any kind of contact with any inside part of this unit.

This symbol alerts the user that important literature concerning the operation and maintenance of this has been included. Therefore, it should be read carefully in order to avoid any problems.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are indicated by the "⚠" mark on the schematic diagram and the replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent X-radiation, shock, fire, or other hazards. Do not modify the original design without permission of manufacture.

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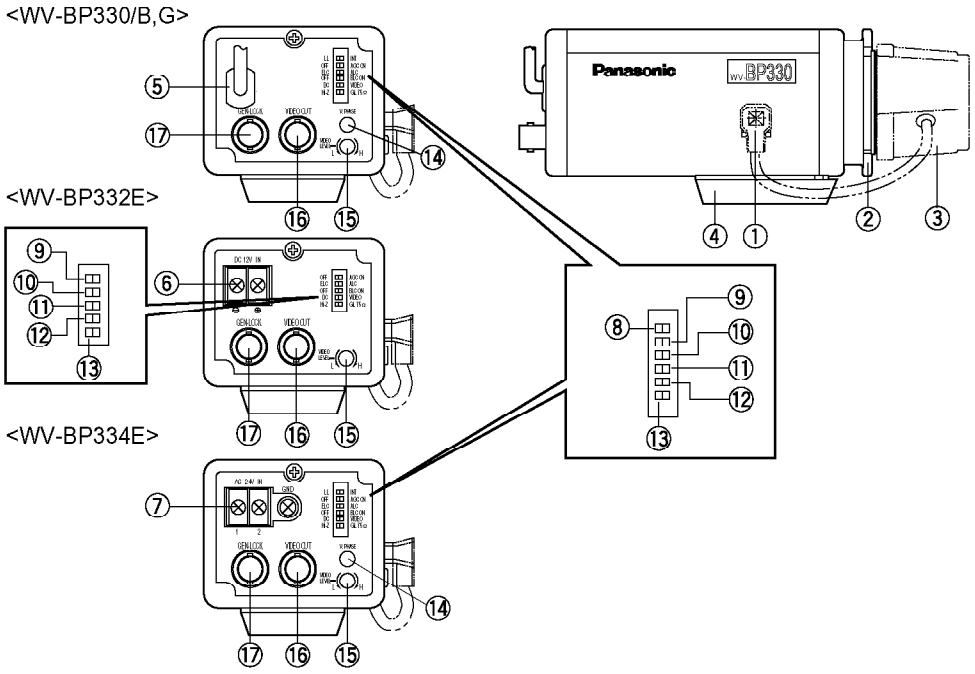
MAJOR OPERATING CONTROLS AND THEIR FUNCTIONS



① **Auto Iris lens Connector**
This connector is for connecting auto iris lens by a 4-pin male connector supplied as a standard accessory (Part No. YFE4191J100).

② **Back-focal Adjusting Ring**
This ring adjusts the back-focal length or picture focus. Rotate this ring clockwise for a C-mount lens or counter-clockwise for a CS-mount lens.

③ **Lens (option)**

④ **Camera Mounting Screw Hole**
This hole is for mounting the camera onto a mounting bracket.

⑤ **Power Cord (only WV-BP330/B,G)**
Connect this power cord to an electrical outlet of 220-240V AC 50Hz.

⑥ **DC 12 V Input Terminal (DC 12V IN (only WV-BP332E)**
This terminal is for connecting the 12V DC power supply cord.

⑦ **AC 24V Input Terminal (AC 24V IN (only WV-BP334E))**
This terminal is for connecting the 24V AC 50Hz power supply cord.

⑧ **Synchronization Mode Selector (INT, L (only WV-BP330/B,G and WV-BP334E))**
Selects the camera synchronization mode from internal sync mode (INT) or line-lock mode (LL).
INT: When no signal is supplied to the GEN-LOCK connector, the camera synchronization mode is set to internal 2:1 interlace. Whenever the gen-lock video signal is supplied to the GEN-LOCK connector, the camera synchronization mode is automatically set to external synchronization.
LL: The camera synchronization mode is set to line-lock even if the gen-lock video signal is supplied to the GEN-LOCK connector.
Note: Set this selector to INT for gen-lock operation.

⑨ **AGC ON/OFF Selector (AGC ON, OFF)**
Selects the gain of the video amplifier as follows:
AGC ON: When the lens iris is fully open under low light condition, a clear picture is obtained by automatic increase of the gain.
OFF: A natural and low-noise picture is obtained under low light conditions.

⑩ **Automatic Light Control / Electronic Light Control Selector (ALC , ELC)**
Lets you select the mode according to the lens type that is used with this camera.
ALC: Select this mode when an auto iris lens (ALC lens) is used with this camera.
ELC: Select this mode when a fixed iris lens or manual iris lens is used with this camera.

⑪ **Back Light Compensation Mode Selector (BLC ON, OFF)**
Lets you select the mode according to the position of the object and light conditions on the screen.
BLC ON: More photometric weight is given to the centre of the screen than to the edge of the screen. Select this mode if the background light is strong such as a spotlight.
OFF: Lets you this mode if the main object is not located in the centre of the screen and a source of bright light is located near the centre of the screen.

⑫ **Lens Drive Signal Selector (VIDEO, DC)**
Lets you select the mode according to the type of auto iris lens drive signal to be supplied to the lens from the auto iris lens connector.

VIDEO: Select this mode if you are using the auto iris lens that requires a video drive signal.

DC: Select this mode if you are using the auto iris lens that requires a DC drive signal.

⑬ **Gen-lock Termination Selector (Hi-Z, G/L75Ω)**

Set this selector to Hi-Z when a gen-lock video input signal is looped through. In all other cases, set this selector to 75Ω.

⑭ **Vertical Phase Control (V. PHASE (only WV-BP330/B,G and WV-BP334E))**

Allows you to adjust the vertical phase of the camera signal to match the vertical phase of the line power.

⑮ **Video Level Control (VIDEO LEVEL, H(High)-L(Low))**

Allows you to adjust the video level when the Lens Drive Signal Selector is set to DC and the auto iris lens requiring the DC drive signal is mounted on the camera.

Note: The video level should be adjusted by the lens when the auto iris lens requiring the video drive signal is mounted on the camera.

⑯ **Video Output Connector (VIDEO OUT)**

This connector is for connecting with the VIDEO IN connector of the monitor.

⑰ **Gen-lock Input Connector (GEN-LOCK)**

This connector is for connecting an external system for synchronization.

Caution:

Connect to 12V DC (10.5V-16V) or 24V AC (19.5V-28V) class 2 power supply only. Make sure to connect the grounding lead to the GND terminal when the power is supplied from a 24V AC power source.

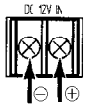
CONNECTIONS

A. WV-BP330/B,G (220-240V AC 50Hz)

Connect the power cord to an electrical outlet of 220-240V AC 50Hz.

B. WV-BP332E (12V DC)

Connect the power cord to the DC 12V IN terminal on the rear panel of the WV-BP332.



12 V DC
(10.5 V - 16 V)

Resistance of copper wire [at 20°C (68°F)]

Copper wire size (AWG)	#24 (0.22mm²)	#22 (0.33mm²)	#20 (0.52mm²)	#18 (0.83mm²)
Resistance Ω/m	0.078	0.050	0.030	0.018
Resistance Ω/ft	0.026	0.017	0.010	0.006

- Calculation of maximum cable length between camera and power supply :

10.5V DC ≤ VA – (R x 0.42 x L) ≤ 16V DC
L : Cable length (meters)
R : Resistance of copper wire (Ω/meters)
VA : DC output voltage of power supply unit

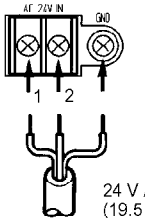
$$L\ \text{standard} = \frac{VA - 12}{0.42 \times R}\ \text{(meters)}$$

$$L\ \text{minimum} = \frac{VA - 16}{0.42 \times R}\ \text{(meters)}$$

$$L\ \text{maximum} = \frac{VA - 10.5}{0.42 \times R}\ \text{(meters)}$$

C. WV-BP334E (24V AC 50Hz)

Connect the power cable to the AC 24V IN terminal on the rear panel of the WV-BP334.



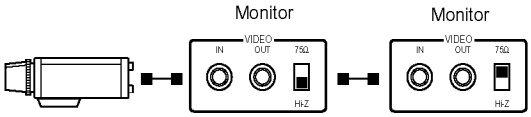
24 V AC, 50 Hz
(19.5 V - 28 V)

Recommended wire gauge sizes for 24V AC line

Copper wire size (AWG)		#24 (0.22mm²)	#22 (0.33mm²)	#20 (0.52mm²)	#18 (0.83mm²)
Length of Cable (Approx.)	(m)	95	150	255	425
	(ft)	314	495	842	1 403

Video Cable

1. It is recommended to use a monitor whose resolution is at least equal to that of the camera.
2. Set the termination switch to the 75Ω position on the last monitor.
   A. Use a 75Ω coaxial cable.
   B. Set the termination switch to the 75Ω position on the last monitor and to the Hi-Z position on the other monitors. Do not change the positions after setting.



   C. The maximum extensible coaxial cable length between the camera and the monitor is shown below.

Type of coaxial cable		RG-59/U (3C-2V)	RG-6/U (5C-2V)	RG-11/U (7C-2V)	RG-15/U (10C-2V)
Recommended maximum cable length	(m)	250	500	600	800
	(ft)	825	1 650	1 980	2 640

3. Wiring precautions:
   • Do not bend the coaxial cable into a curve whose radius is smaller than 10 times the cable's diameter.
   • Never staple the cable, not even with circular staples. Impedance mismatching will occur.
   • Never crush or pinch the cable.

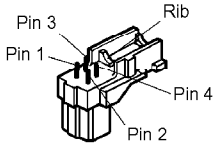
All of the above will change the impedance of the cable and cause poor picture quality.

Installation of Auto Iris Lens Connector

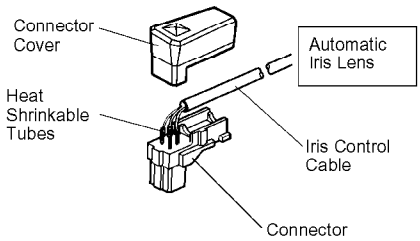
Install the lens connector (YFE4191J100) when using a video drive ALC lens.

The installation should be made by qualified service personnel or system installers.

(1) Cut the iris control cable at the edge of the lens connector to remove the existing lens connector and then remove the outer cable cover as shown in the diagram below.
The pin assignment of the lens connector is as follows:
Pin 1: Power source; +9V DC, 50mA max.
Pin 2: Not used
Pin 3: Video signal; 1.3 V[p-p]/40 kΩ
Pin 4: Shield, ground



(2) After connection, assemble the lens connector as follows.

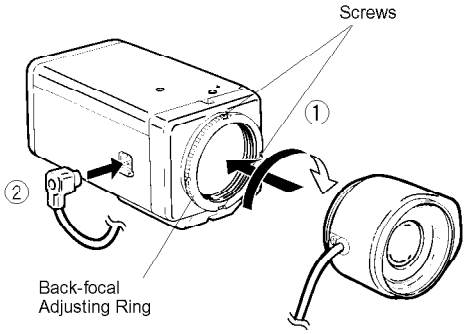


Note: When the iris control cable is too thick to lock the connector cover with the connector base, cut off the rib on the connector.
(Set the Lens Drive Signal Selector to the VIDEO position.)

Mounting the Lens

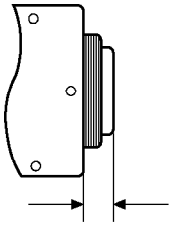
Caution:
Before you mount the lens, loosen the two screws on the ring, and rotate this ring clockwise until it stops. If the ring is not at the end, the inner glass or CCD image sensor may be damaged.

1. Mount the lens by turning it clockwise on the lens mount of the camera.
2. Connect the lens cable to the auto iris lens connector on the side of the camera.



Caution for Mounting the Lens

The lens mount should be a C-mount or CS-mount (1"-32UN) and the lens weight should be less than 450g (0.99 lbs). If the lens is heavier, both the lens and camera should be secured by using the supporter.
The protrusion at the rear of the lens should be as shown below:

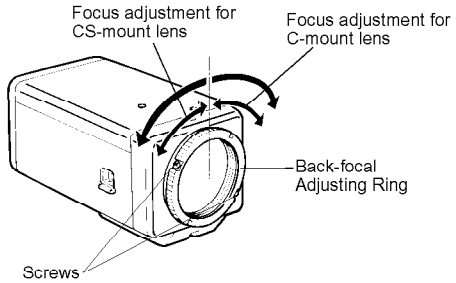


C-mount: Less than 11.5 mm (7/16")
CS-mount: Less than 7.2 mm (1/4")

FOCUS OR BACK-FOCAL ADJUSTMENT

The following adjustment should be made by qualified service personnel or system installers.

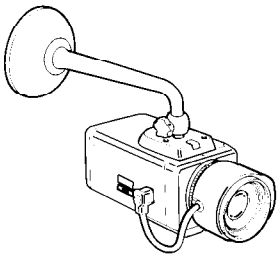
1. Loosen the screws on the back-focal adjusting ring.



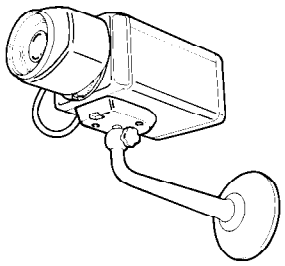
2. Turn the back-focal adjusting ring to the desired position.
   Caution: When the C-mount lens is mounted, do not rotate the ring counterclockwise by force after it stops. If the ring is rotated by force, the inner lens or CCD image sensor may be damaged.
3. Tighten the screws on the back-focal adjusting ring.

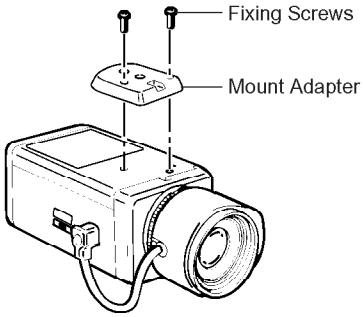
   Note: If the camera is connected to the Quad System, glare may appear at the edge of the camera picture on the monitor.
   If this bothers you, adjust the lens focus to reduce the glare.

<Mounting at top>



<Mounting at bottom>





INSTALLATION OF CAMERA

• Mounting from the bottom

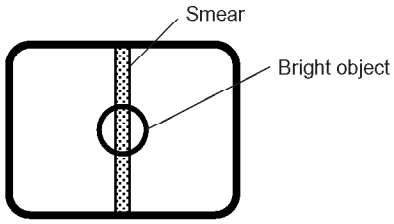
This camera is designed to be mounted from the bottom, as shown in right column. The mounting hole is a standard photographic pan-head screw size (1/4" - 20).

• Mounting from the top

Remove the mount adapter from the bottom of the camera by removing the two fixing screws. Attach the mount adapter to the top as shown in the diagram, then mount the camera on the mounting bracket.
Make sure that the two original fixing screws are used when mounting the mount adapter as longer length screws may damage inner components.

PREVENTION OF BLOOMING AND SMEAR

When the camera is aimed at a bright light, such as a spot light, or a surface that reflects bright light, smear or blooming may appear. Therefore, the camera should be operated carefully in the vicinity of extremely bright objects to avoid smear or blooming.



ADJUSTMENT PROCEDURE

1. Test Equipment Required

- The following Test Equipments are required for adjustment of the WV-BP330 Series.

- Oscilloscope
- Digital Voltmeter
- Waveform Monitor
- Underscanned Black and White Video Monitor
- Signal Generator (Black Burst or Composite Video Signal)
- 12V DC Power Supply Unit
- Lighting (200 footcandles (1,050 ± 50 nt (2,750 ± 150 lx))
- Lux Meter
- ALC Lens (WV-LA9C3A or equivalent)
- Manual Iris Lens
- Filter (ND8)
- Personal Computer (IBM-PS2 or equivalent)
- Standard Straight RS-232C Cable
- Electric Variable Resistor (E.V.R.) Adjustment Kit (Part No. : YWV0EA0182AN)
- Logarithmic Gray Scale Chart (Part No. : YWV2310RB99)
- Extension Board (Part No. : YWVBP33SRZ1A)
- Mounting Bracket (Part No. : YWV2SA4581A4)

2. Disassembling Procedure for Adjustment

- Referring to Fig. 2-1, remove two screws that secure the Mounting Bracket and remove the Mounting Bracket.

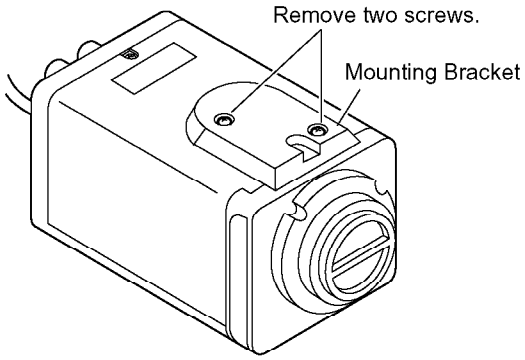


Fig. 2-1

- Referring to Fig. 2-2, remove two screws that secure the Bottom Cover and remove the Bottom Cover.

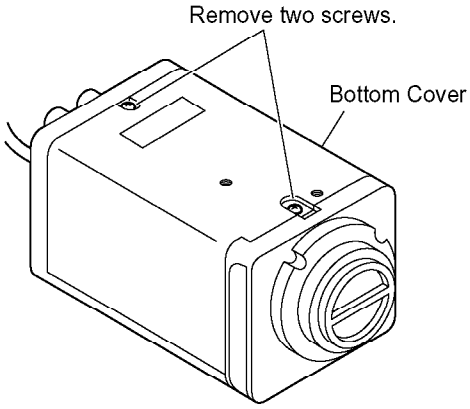


Fig. 2-2

- Referring to Fig. 2-3, disconnect two connectors CN1 and CN4 and remove two screws that secure the Main Board, and remove the Main Board Ass'y.

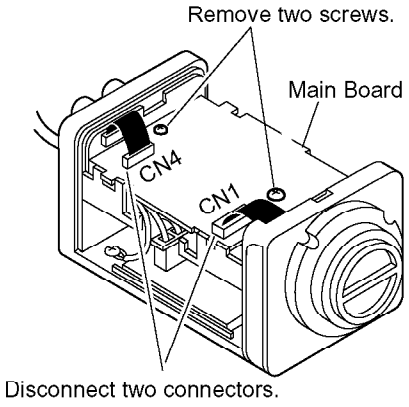


Fig. 2-3

- Referring to Fig. 2-4, mount the Mounting Bracket by removed screw.

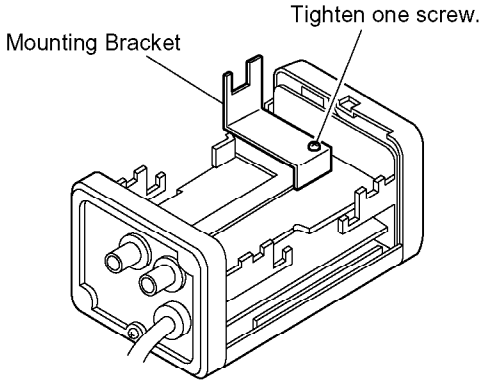


Fig. 2-4

- Referring to Fig. 2-5, connect between CN1 on the Rear Board and CN4 on the Main Board by the Extension Board.

- Connect CN1 on the Main Board.

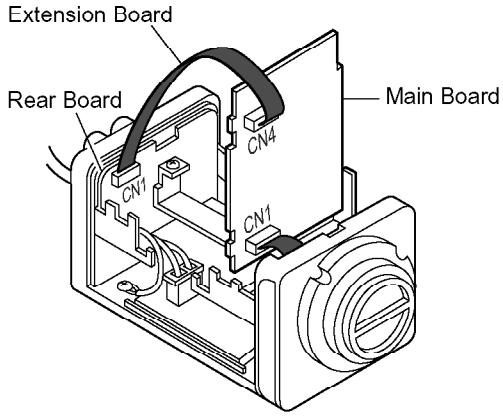


Fig. 2-5

3. Head Optical Ass'y Replacement

- Disassemble the Camera while referring to the Item **2. Disassembling Procedure for Adjustment.**
- Referring to Fig. 3-1, remove one screw that secure the Front Chassis and remove the Front Chassis.

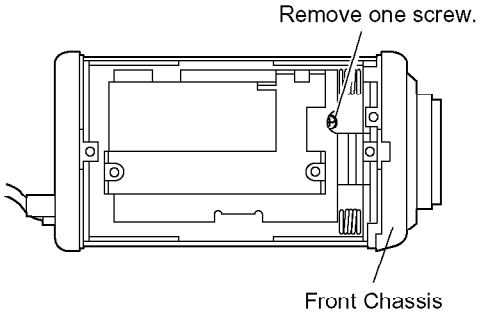


Fig. 3-1

- Referring to Fig. 3-2, remove one screw that secure the ALC Board, and disconnect CN1 from the Sensor Board.
- Remove CN2 (ALC Connector) from the Front Chassis and remove the ALC Board.

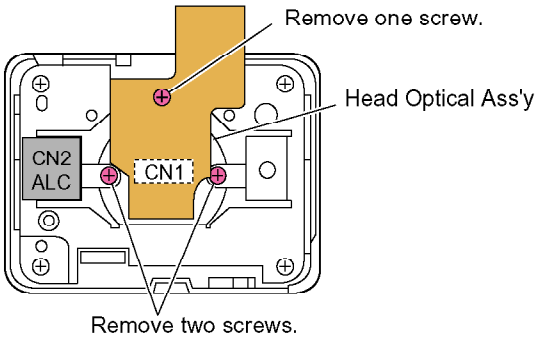


Fig. 3-2

- Referring to Fig. 3-3, remove four screws that secure the Front Chassis and remove the Front Panel and Head Optical Ass'y.

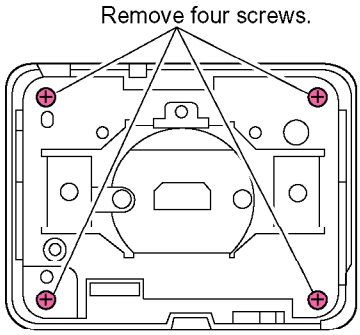


Fig. 3-3

4. Connection and Setting Up for Adjustment

4.1. Connection

- Fig. 4-1 shows the connecting diagram for the adjustment procedure.

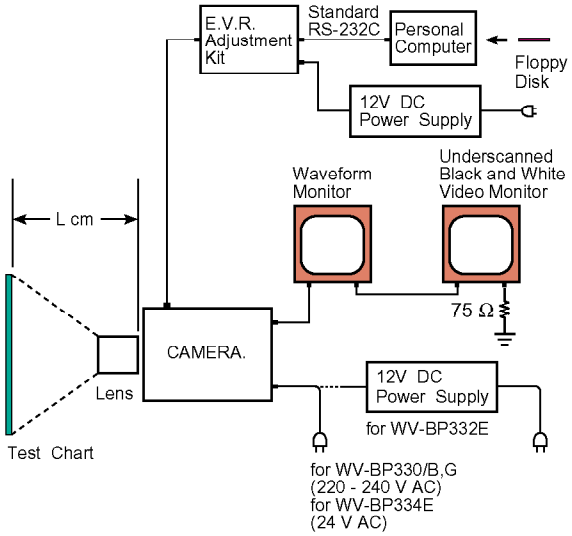


Fig. 4-1

- Connect the Underscanned Black and White Video Monitor to the Video Output Connector on the Rear Panel of the Camera through the Waveform Monitor.
- Terminate the input terminal of the Underscanned Black and White Video Monitor with 75Ω.
- Connect the E.V.R. Adjustment Kit to CN5 on the Main Board of the Camera using supplied extension cable.
- Connect the Personal Computer to the E.V.R. Adjustment Kit using the standard straight RS-232C cable.

- Connect the 12V DC Power Supply Unit to the 12V DC Input Connector of the E.V.R. Adjustment Kit.
- **For WV-BP332E**, connect the 12 V DC Power Supply Unit to the DC 12V Input Terminal on the Rear Panel of the Camera.
- **For WV-BP334E**, connect the 24 V AC Power Supply Unit to the AC 24V Input Terminal on the Rear Panel of the Camera.
- Connect probe of the Oscilloscope, Frequency Counter and Digital Voltmeter to desired Test Point in each adjustment step.

4.2. Initial Position of the Switches and Level Controls for Adjustment

- An initial setting of the Switches and Level Controls on the Rear Panel of the Camera for this adjustment procedure are as follows:

DIP Switch (SW1)

Synchronization Mode Selector (only AC type) . . . . . .INT
AGC ON/OFF Selector . . . . . .OFF
Automatic Light Control /
Electronic Light Control Selector . . . . . .ALC
Back Light Compensation Mode Selector . . . . . .OFF
Lens Drive Signal Selector . . . . . .VIDEO
Gen-lock Termination Selector G/L75Ω
Video Level Control (VR2). . . . . .
Mechanical Center Position

Vertical Phase Control (VR1). . . . . .
Mechanical Center Position

- The adjustment should be done with this initial setting, unless otherwise specified.

4.3. Setting Up for Standard Picture

- Mount the ALC Lens (WV-LA9C3A) on the Camera.
- Set the Logarithmic Gray Scale Chart.
- Incident light intensity of 1,050 ± 50 nt (2,750 ± 150 lx) on the Logarithmic Gray Scale Chart.
- Aim the Camera at the Logarithmic Gray Scale Chart.
- Set the Camera so that the Logarithmic Gray Scale Chart becomes full picture on the Underscanned Black and White Video Monitor.
- Turn the Lens Focus to obtain correct focal point.

- This adjustment should be done after 10 minutes warm up of the Camera.

5. Adjustment Procedure

- Refer to the Location of the Test Points and Adjusting Controls on page 12.

■ Adjustment Procedure - 1

(1) 9V Confirmation

Test point: CN4-1 (9V) **Main Board**

- Connect the Digital Voltmeter to the pin 1 of CN4 on the Main Board.
- Confirm that the voltage at the pin 1 of CN4 becomes 9.00 ± 0.3 V

■ Adjustment Procedure - 2 (E.V.R. Adjustment)

- Connect the E.V.R. Adjustment Kit to CN5 on the Main Board using extension cable supplied.
- Connect E.V.R. Adjustment Kit to IBM-PC (Personal Computer) using standard straight RS-232C cable.
- Insert new disk containing DOS Operating System and E.V.R. Adjustment Program into IBM-PC and turns on power switch of IBM-PC.
- At the prompt, type **ADJ2E BP330E** and press the **ENTER** key, an initial menu for adjustment as shown in Table 5-1 will be displayed.

```
PANASONIC EVR ADJUSTMENT SYSTEM (C)MCI Co. PRDCT PRODUCT : BP330  EEPROM : 0
********************************** MENU ********** Page(1/1) **** PAL

  1. ALC VR INIT.                  14.4. Y LEVEL CHECK
  2. LL VR INIT.                   14.5. Y LEVEL CHECK
  3.1. VCO ADJ (FOR AC TYPE)       15. PEDESTAL
  3.2. VCO ADJ (FOR DC TYPE)       16. HI LEVEL CLIP
  4. LL PHASE (AC TYPE ONLY)       17. AGC MAX GAIN
  5. RESET BIAS                    18. SYNC LEVEL
  6. VSUB
  7. III CLIP LEVEL
  8. PEDESTAL
  9. INIT FOR Y-GAIN
 10. VIDEO OUT GAIN
 11. ALC DC
 12. ALC LEVEL
 13. BLC LEVEL
 14.1. Y LEVEL CHECK
 14.2. Y LEVEL CHECK
 14.3. Y LEVEL CHECK

<CONTENTS>    ALC VR INIT.   80 + - 10h
<INSTRUCTION> PLEASE CHOOSE MENU DATA BY ARROW-KEY
   LOAD(F1)          QUIT(F3)          SAVE(F5)
```

Table 5-1

- Press the **SAVE (F5)** key. Then computer will ask you for the file name.
- Give appropriate file name to the computer. But do not use **BP330E.EVR** for your file name. This saving procedure is recommended to keep the current status of the camera.

- Press the **LOAD (F1)** key and type **BP330E.EVR**, and press the **ENTER** key for presetting adjustment of the camera.

Note:

- **EEPROM** mentioned in this adjustment procedure is IC10 on the Digital Process Circuit Section of the Main Board.
- **RAM** mentioned in this adjustment procedure is internal RAM of IC5 on the Main Board.

1. ALC VR Initialize

Test point: **RAM0 (0C2)** **Main Board**
Adjust: **VR2 (VIDEO LEVEL)** **Rear Panel**

- Confirm the measured Data on the E.V.R. Menu becomes 80 ± 10h.
- If not satisfied, adjust VR2 to obtain within specification.
- Press the **ENTER** key for next adjustment.

2. Vertical Phase VR Initialize (only for AC Type)

Test point: **RAM0 (0C2)** **Main Board**
Adjust: **VR1 (V.PHASE)** **Rear Panel**

- Confirm the measured Data on the E.V.R. Menu becomes 80 ± 10h (only for WV-BP330 and WV-BP334).
- If not satisfied, adjust VR1 to obtain within specification.
- Press the **ENTER** key for next adjustment.

3.1. VCO Adjustment (for AC Type)

Test point: **TP2 (VCO)** **Main Board**
Adjust: **RAM** **Main Board**

- Connect the Digital Voltmeter to TP2 on the Main Board.
- Adjust data with the **ARROW** keys so that the DC Voltage becomes 1.5 ± 0.1 V.
- Press the **ENTER** key for next adjustment.

3.2. VCO Adjustment (for DC Type)

Test point: **TP2 (VCO)** **Main Board**
Adjust: **RAM** **Main Board**

- Connect the Digital Voltmeter to TP2 on the Main Board.
- Supply the VS signal to the Gen-lock Input Connector on the Rear Panel.
- Adjust data with the **ARROW** keys so that the DC Voltage becomes 1.5 ± 0.1 V.
- Press the **ENTER** key for next adjustment.

4. LL Phase Adjustment (for AC Type)

Test point: **Video Output Connector** **Rear Panel**
Adjust: **RAM** **Main Board**

- Set the Synchronization Mode Selector on the Rear Panel to the LL position.
- Connect the CH1 of the Oscilloscope to the Live side of the AC Power Cord.
- Connect the CH2 of the Oscilloscope to the Video Output Connector.
- Adjust data with the **ARROW** keys so that the Phase difference between Live Line and Vertical Sync signal becomes 2H ± 4H as shown in Fig. 5-1.

  Note: While adjustment, if exceed the following limits, the power source of the Camera must be turn off and turn on again.

  00 00 ≦ RAM (04C) ; RAM (04B) ≦ 01 15

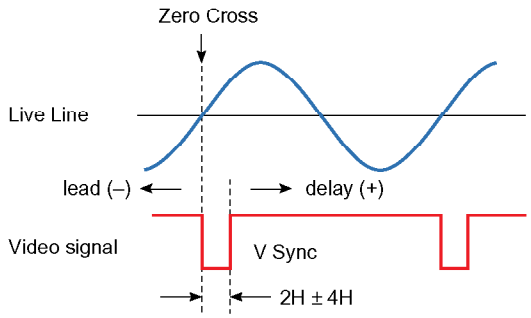


Fig. 5-1

- After completion of adjustment, set the Synchronization Mode Selector on the Rear Panel to the INT position.
- Press the **ENTER** key for next adjustment.

5. Reset Bias Adjustment

Test point: **C20 (IC6 Side) (CCDOUT)** **Main Board**
Adjust: **VR1 (RESET BIAS)** **Main Board**

- Aim the Camera at the Logarithmic Gray Scale Chart.
- Connect the Oscilloscope to C20 (IC6 Side).
- Trigger the Oscilloscope at the H-rate.
- Adjust VR1 so that the Reset Noise becomes maximum in condition of maximum CCDOUT signal as shown in Fig. 5-2.

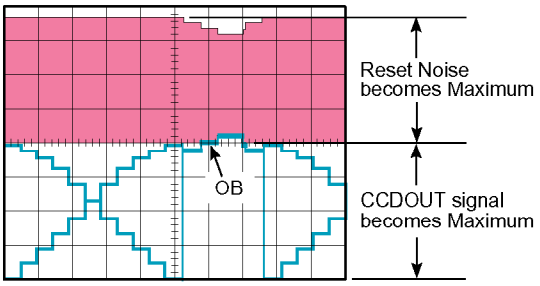


Fig. 5-2

- Press the **ENTER** key for next adjustment.

6. VSUB Adjustment

Test point: Video Output Connector **Rear Panel**

Adjust: VR2 (VSUB) **Main Board**

- Turn VR2 to obtain noise on the Video Monitor, and adjust VR2 so that the noise just disappears as shown in Fig. 5-3.

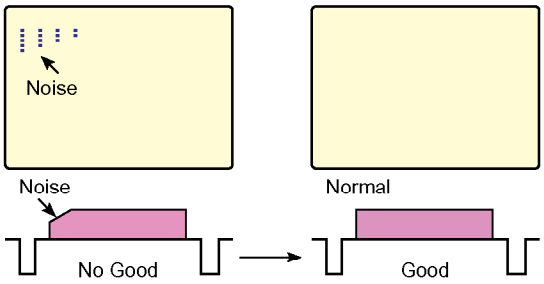


Fig. 5-3

Note: VR2 should be adjusted to the point where the blooming just eliminates.
Do not turn VR2 too much.

- Press the **ENTER** key for next adjustment.

7. High Light Clip Level Confirmation

Test point: Video Output Connector **Rear Panel**

- Confirm that the High Light Clip Level becomes 820 $\pm^{+30}_{-0}$ mVp-p) as shown in Fig. 5-4.

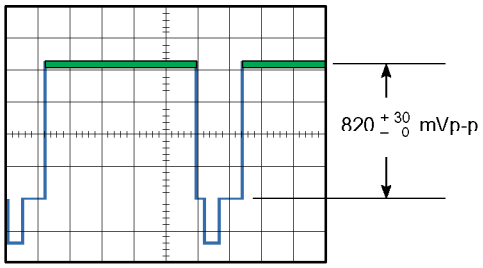


Fig. 5-4

- Press the **ENTER** key for next adjustment.

8. Pedestal Level Confirmation

Test point: Video Output Connector **Rear Panel**

- Confirm that the Pedestal Level becomes 50 ± 10 mVp-p as shown in Fig. 5-5.

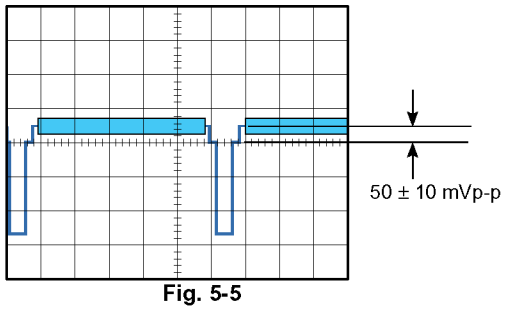


Fig. 5-5

- Press the **ENTER** key for next adjustment.

9. Luminance Gain Initialization

Test point: C20 (IC6 Side) (CCDOUT) **Main Board**

- Mount ND8 Filter on the Lens.
- Aim the Camera at the Logarithmic Gray Scale Chart.
- Connect the Oscilloscope to C20 (IC6 Side).
- Turn the Video Level Control on the Rear Panel so that the CCDOUT signal level at C20 becomes 400 ± 10 mVp-p.
- Press the **ENTER** key for next adjustment.

10. Video Output Level Confirmation

Test point: Video Output Connector **Rear Panel**

- Confirm that the Video Output Level becomes 700 ± 50 mVp-p as shown in Fig. 5-6.

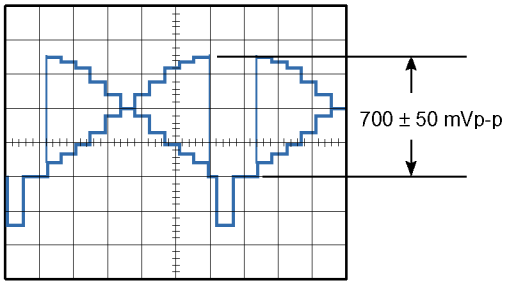


Fig. 5-6

- Press the **ENTER** key for next adjustment.

11. ALC DC Confirmation

- Press the **ENTER** key for next adjustment.

12. ALC Level Confirmation

Test point: Video Output Connector **Rear Panel**

- Confirm that the Video Output Level becomes 700 ± 50 mVp-p as shown in Fig. 5-6.
- Press the **ENTER** key for next adjustment.

13. BLC Level Confirmation

Test point: Video Output Connector Rear Panel

- Set the Back Light Compensation Mode Selector to ON position.
- Confirm that the Video Output Level becomes 700 ± 50 mVp-p as shown in Fig. 5-6.
- Press the **ENTER** key for next adjustment.

14.1. Luminance Level Confirmation

Test point: Video Output Connector Rear Panel

- Set the Back Light Compensation Mode Selector to OFF position.
- Confirm that the Video Output Level becomes 700 ± 50 mVp-p as shown in Fig. 5-6.
- Press the **ENTER** key for next adjustment.

14.2. Luminance Level Confirmation (AGC ON)

Test point: Video Output Connector Rear Panel

- Set the AGC ON/OFF Selector to ON position.
- Confirm that the Video Output Level becomes 700 ± 50 mVp-p as shown in Fig. 5-6.
- Press the **ENTER** key for next adjustment.

14.3. Luminance Level Confirmation (BLC ON)

Test point: Video Output Connector Rear Panel

- Set the AGC ON/OFF Selector to OFF position.
- Set the Back Light Compensation Mode Selector to ON position.
- Confirm that the Video Output Level becomes 700 ± 50 mVp-p as shown in Fig. 5-6.
- Press the **ENTER** key for next adjustment.

14.4. Luminance Level Confirmation (ELC, BLC OFF)

Test point: Video Output Connector Rear Panel

- Set the Automatic Light Control/Electronic Light Control Selector to ELC position.
- Set the Back Light Compensation Mode Selector to OFF position.
- Confirm that the Video Output Level becomes 700 ± 50 mVp-p as shown in Fig. 5-6.
- Press the **ENTER** key for next adjustment.

14.5. Luminance Level Confirmation (ELC, BLC ON)

Test point: Video Output Connector Rear Panel

- Set the Back Light Compensation Mode Selector to ON position.
- Confirm that the Video Output Level becomes 700 ± 50 mVp-p as shown in Fig. 5-6.
- Press the **ENTER** key for next adjustment.

15. Pedestal Level Confirmation

Test point: Video Output Connector Rear Panel

- Set the Automatic Light Control/Electronic Light Control Selector to ELC position.
- Set the Back Light Compensation Mode Selector to OFF position.
- Confirm that the Pedestal Level becomes 50 ± 10 mVp-p as shown in Fig. 5-7.

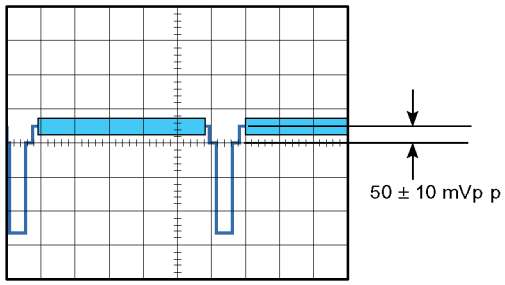


Fig. 5-7

- Press the **ENTER** key for next adjustment.

16. High Light Clip Level Confirmation

Test point: Video Output Connector Rear Panel

- Confirm that the High Light Clip Level becomes 820 $\pm^{+30}_{-0}$ mVp-p) as shown in Fig. 5-8.

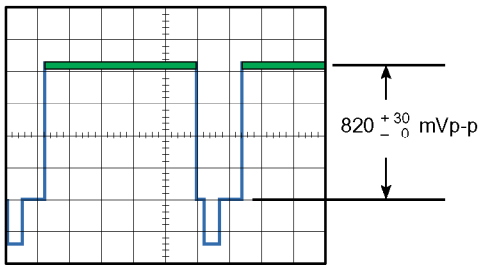


Fig. 5-8

- Press the **ENTER** key for next adjustment.

17. AGC Max Gain Confirmation

Test point: Video Output Connector Rear Panel

- Set the AGC ON/OFF Selector to ON position.
- Confirm that the Video Output Level becomes 70 mVp-p as shown in Fig. 5-9.

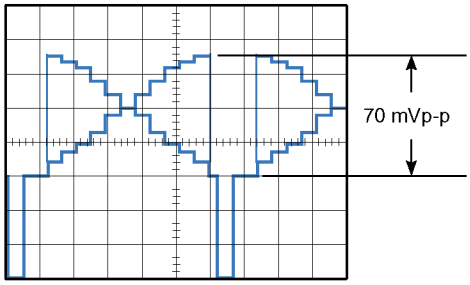


Fig. 5-9

- Press the **ENTER** key for next adjustment.

18. Sync Level Confirmation

Test point: Video Output Connector Rear Panel

- Set the AGC ON/OFF Selector to OFF position.
- Confirm that the Sync Level becomes 300 ± 31.5 mVp-p as shown in Fig. 5-10.

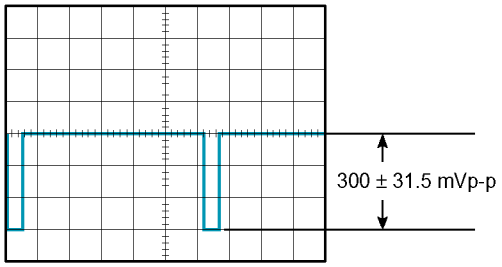


Fig. 5-10

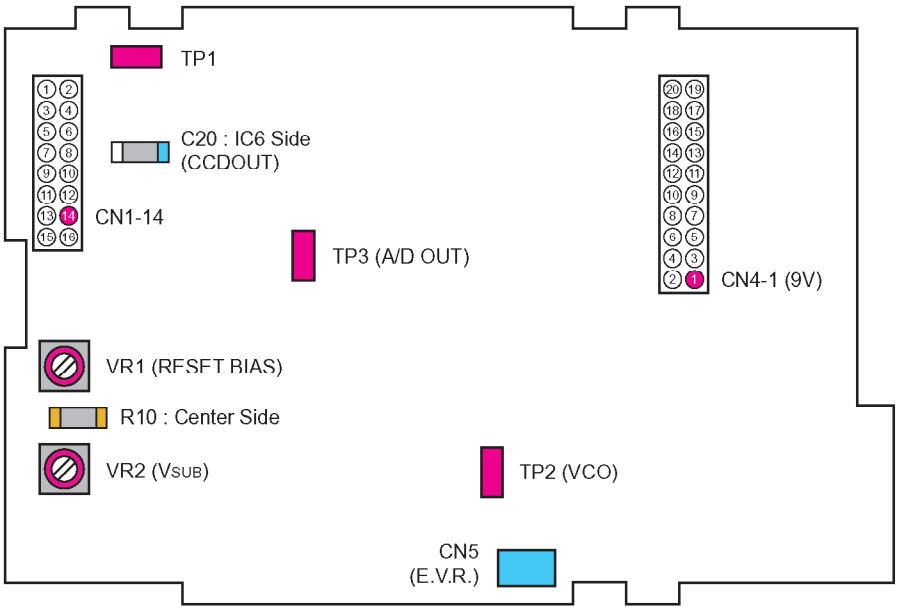
- Press the **ENTER** key for next adjustment.

- After finishing the adjustment, press the QUIT (F3) key.

- Press **N** and **ENTER** keys to finish.
- Disconnect the Cable from CN5 on the Main Board

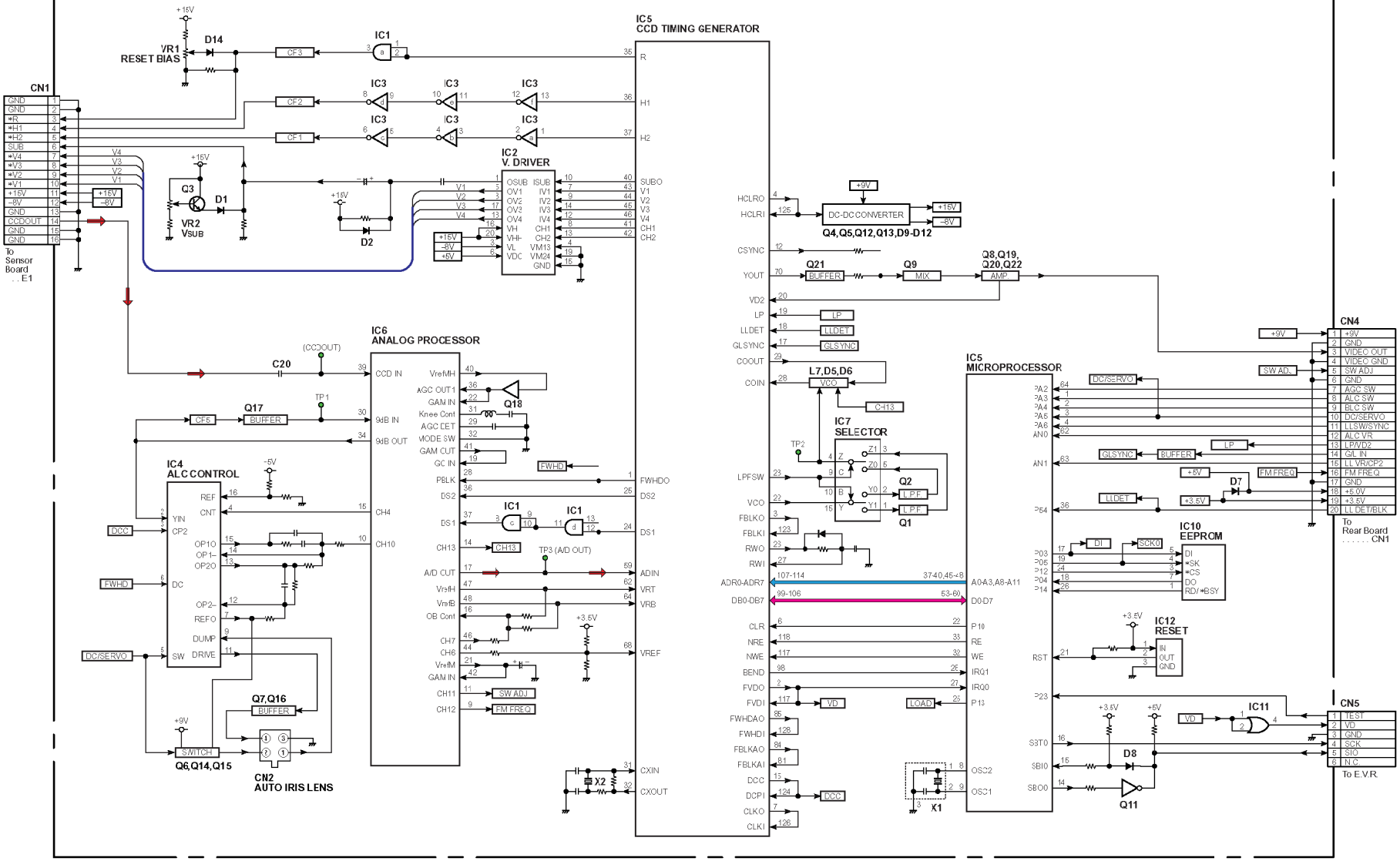
LOCATION OF TEST POINTS AND ADJUSTING CONTROLS

MAIN BOARD (COMPONENT SIDE)



BLOCK DIAGRAM OF MAIN BOARD

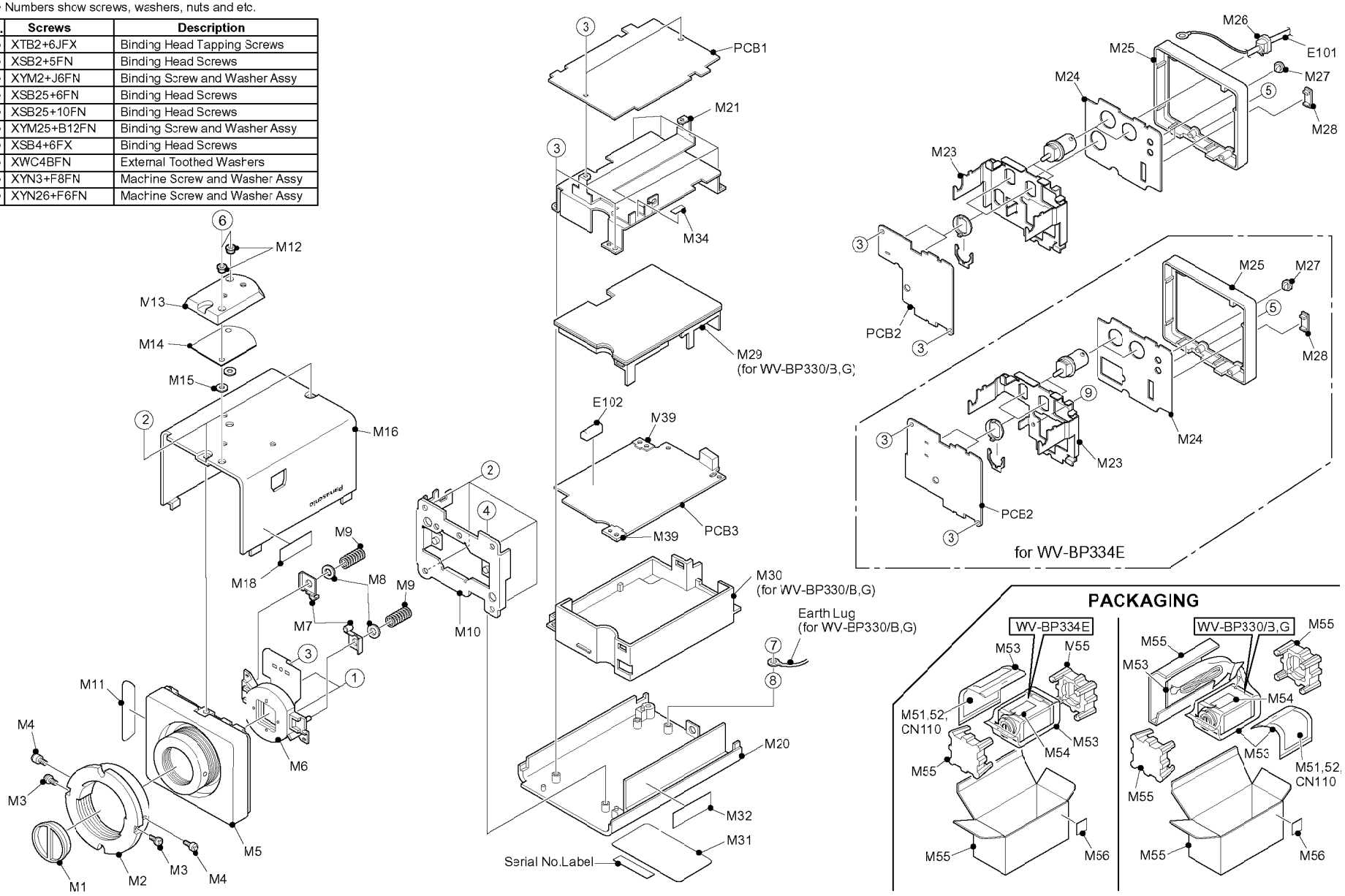
MAIN BOARD



EXPLODED VIEW OF WV-BP330/B,G / WV-BP334E

◯ Numbers show screws, washers, nuts and etc.

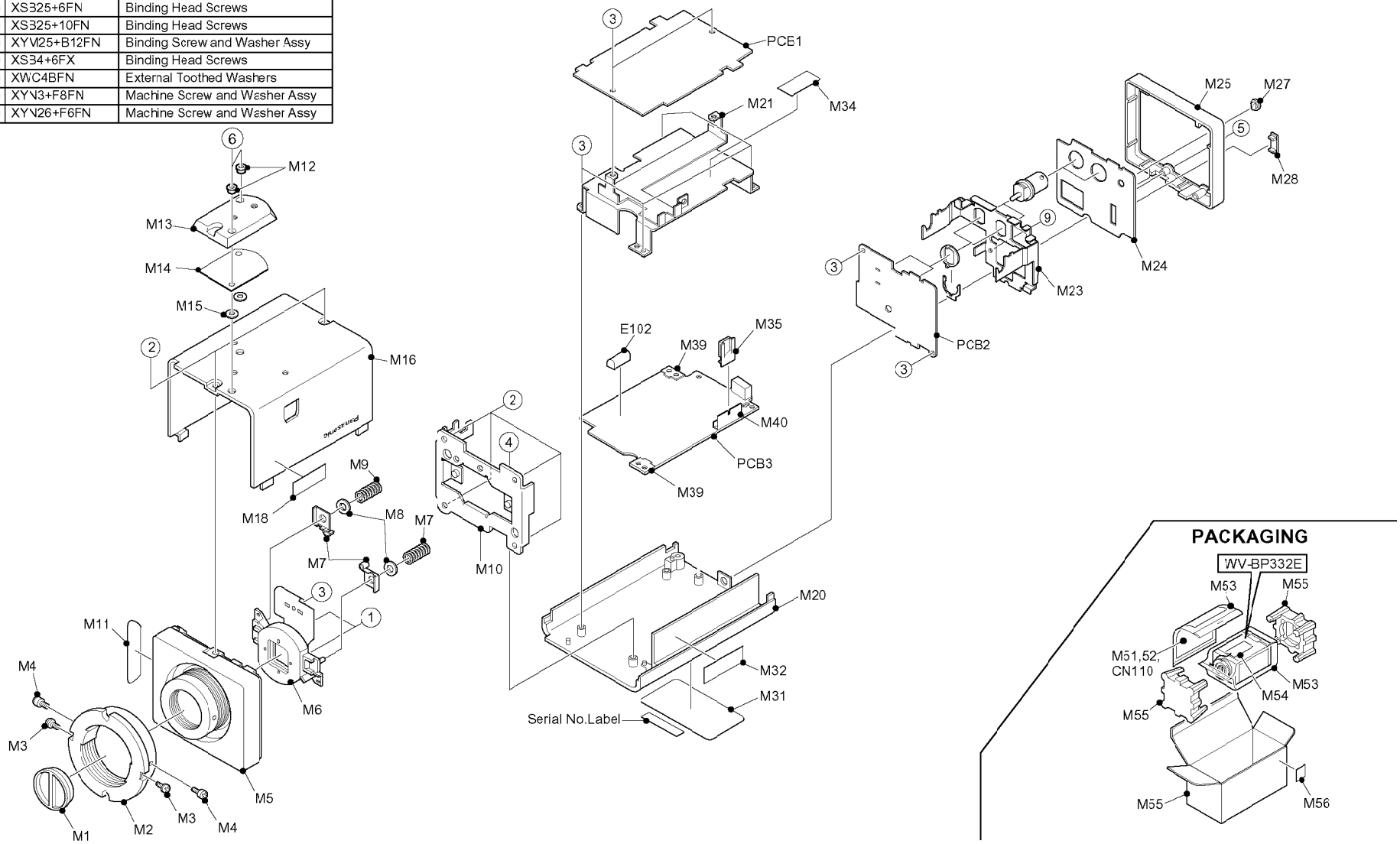
No.	Screws	Description
①	XTB2+6JFX	Binding Head Tapping Screws
②	XSB2+5FN	Binding Head Screws
③	XYM2+J6FN	Binding Screw and Washer Assy
④	XSB25+6FN	Binding Head Screws
⑤	XSB25+10FN	Binding Head Screws
⑥	XYM25+B12FN	Binding Screw and Washer Assy
⑦	XSB4+6FX	Binding Head Screws
⑧	XWC4BFN	External Toothed Washers
⑨	XYN3+F8FN	Machine Screw and Washer Assy
⑩	XYN26+F6FN	Machine Screw and Washer Assy



EXPLODED VIEW OF WV-BP332E

◯ Numbers show screws, washers, nuts and etc.

No.	Screws	Description
①	XTB2+6JFX	Binding Head Tapping Screws
②	XSB2+5FN	Binding Head Screws
③	XYW2+J6FN	Binding Screw and Washer Assy
④	XSB25+6FN	Binding Head Screws
⑤	XSB25+10FN	Binding Head Screws
⑥	XYW25+B12FN	Binding Screw and Washer Assy
⑦	XSB4+6FX	Binding Head Screws
⑧	XWC4BFN	External Toothed Washers
⑨	XYW3+F8FN	Machine Screw and Washer Assy
⑩	XYW26+F6FN	Machine Screw and Washer Assy



REPLACEMENT PARTS LIST

Important Notice

1. Components identified by " ⚠ " mark have special characteristics important for safety.
   When replacing any of these components, use only manufacturer's specified parts.
2. RTL : Retention Time Limited (No longer available after discontinuing product).

REF. NO.		PART NO.	DESCRIPTION
CCTV CAMERA			
MISCELLANEOUS			
FB1		YWFPC330A	Flexible Board
CN1	⚠	YWVAR2	Power Connector Case
E101	⚠	YWGBSXB	Power Cable Assy for WV-BP330/B
		YWP242SXG	Power Cable Assy for WV-BP330/G
M1		YWBC-2B	Body Cap
M2		YWV3FA0178A3	FB Adjustment Ring
M3		YWV1EB0127A4	FB Lock ,Screw
M4		YWV1EA0128A4	Special Screw
M5		YWV5BA0128A2	Front Escutcheon
M6		YWVBP330EA02	Head Optical Assy
M7		YWV4JA0479A4	Spring
M8		YWV2CA0386A4	Front Hold Plate
M9		YWV4JA0262A4	Spring
M10		YWV2SA4236A3	Front Mounting Angle
M11		YWV5WA2426A4	Front Side Panel
M12		YFV2NA0084A4	Spacer
M13		YWV2TB0333A3	Mounting Bracket
M14		YWV2PA0615A4	Insulator
M15		YWV1KA0128A4	Washer
M16		YWV5EC1337A2	Upper Cover
M18		YWV7SA3762A4	Model Label for WV-BP330/B,G
		YWV7SA3764A4	Model Label for WV-BP334E
		YWV7SA3765A4	Model Label for WV-BP332E
M20		YWV2KA0874A2	Main Chassis
M21		YWV2HA2044A3	Shield Parts
M23		YWV2SA2641A3	Rear Mounting Angle for WV-BP330/B,G
		YWV2SA2642A3	Rear Mounting Angle for WV-BP332E/BP334E
M24		YWV5WA2426A4	Rear Panel for WV-BP330/B
		YWV5WB2427A4	Rear Panel for WV-BP330/G
		YWV5WB2428A4	Rear Panel for WV-BP334E
		YWV5WB2429A4	Rear Panel for WV-BP332E
M25		YWV5BA0121A3	Rear Escutcheon
M26	⚠	YWSR5N4	Cord Clamp
M27		YWV5GA0156A4	Blank Cap
M28		YWV5GA0162A4	Blank Cap
M29		YWV6EA0196A3	Power Lid for WV-BP330/B,G
M30		YWV5KA1357A3	Power Case for WV-BP330/B,G
M31	⚠	YWV7QA4906A4	Main Label for WV-BP330/B
		YWV7QA4907A4	Main Label for WV-BP330/G
		YWV7QA4908A4	Main Label for WV-BP334E
		YWV7QA4909A4	Main Label for WV-BP332E
M32	⚠	YWV7MA0412A4	Fuse Change Label
M34		YWV2FA1160A4	Cushion
M39		YWV1KA0181A4	Washer
M54		YWV7SA0942A4	Caution Label
MAIN BOARD			
PCB1 (RTL)		YWVBP33EKY2A	Printed Circuit Board Assy
IC1		TC74AC08FSL	IC
IC2		MN3112SA	IC
IC3		YWTC74VC04FS	IC
IC4		YWC5023068E1	IC
IC5		MN101C147AB	CustomIC
IC6		AN2108FHPA	IC
IC7		YWMC14053BF	IC
IC8		MN67351	IC
IC10		YWBR9020FE1	IC
IC11		YWTC7S32F	IC
IC12		MN13821	IC
Q1,2		2SK106945	FET
Q3		2SC4618	Transistor
Q4		2SD1820-QRS	Transistor
Q5,6		2SC4617	Transistor
Q7		2SD1819-QRS	Transistor
Q8		2SC4617	Transistor
Q9		2SC4618	Transistor
Q11		2SC4617	Transistor
Q12		2SB1219-QRS	Transistor
Q13		2SA1774	Transistor
Q14,15		2SB1218A-QR	Transistor
Q16-18		2SA1774	Transistor
Q19,20		2SA1576	Transistor
Q21		2SA1774	Transistor
Q22		UMX1	Transistor
Q23		UMZ1TL	Transistor
D1		MA728	Diode
D2		YWDA121	Diode
D3		MA8150	Diode
D4		MA8082H	Diode
D5,6		YWHVU359TRF	Diode
D7		MA112	Diode
D8		MA729	Diode
D9-11		MA726	Diode
D12		YWDA227TL	Diode
D13		MA726	Diode
D14		MA132K	Diode
D15		YWDA121	Diode

REF. NO.	PART NO.	DESCRIPTION	
D16	MA142K	Diode	
D17-19	YWDA221	Diode	
TH147	L311F202J402	Thermistor	
R1	YWR0816P332D	Metal	3.3K ohms 1/16W
R2	YWR0816P752D	Metal	7.5K ohms 1/16W
R3,4	ERJ3GEYJ220	Carbon	22 ohms 1/16W
R5	ERJ3GEYJ623	Carbon	62K ohms 1/16W
R6	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R7	ERJ3GEYJ105	Carbon	1M ohms 1/16W
R8	ERJ3GEYJ392	Carbon	3.9K ohms 1/16W
R9	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R10	ERJ3GEYJ683	Carbon	68K ohms 1/16W
R13,18	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R21,22	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R23	ERJ3GEYJ123	Carbon	12K ohms 1/16W
R24,25	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R27	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R28	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R29	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R30	ERJ3GEYJ202	Carbon	2K ohms 1/16W
R33	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R34	ERJ3GEYJ432	Carbon	4.3K ohms 1/16W
R35	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R36	ERJ3GEYJ162	Carbon	1.6K ohms 1/16W
R37	ERJ3GEYJ432	Carbon	4.3K ohms 1/16W
R38	ERJ3GEYJ154	Carbon	150K ohms 1/16W
R39	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R40	ERJ3GEYJ153	Carbon	15K ohms 1/16W
R41	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R42	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R43	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R45	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R48	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R49	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R50	ERJ3GEYJ201	Carbon	200 ohms 1/16W
R51	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R52	ERJ3GEYJ271	Carbon	270 ohms 1/16W
R53	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R54	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R55	ERJ3GEYJ154	Carbon	150K ohms 1/16W
R56	YWR0816P302D	Metal	3K ohms 1/16W
R57	ERJ3GEYJ183	Carbon	18K ohms 1/16W
R58	ERJ3GEYJ562	Carbon	5.6K ohms 1/16W
R59	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R60	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R61	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R62	YWR0816P302D	Metal	3K ohms 1/16W
R63	ERJ3GEYJ362	Carbon	3.6K ohms 1/16W
R64,65	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R67	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R68	ERJ3GEYJ361	Carbon	360 ohms 1/16W
R69	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R70,71	ERJ3GEYJ750	Carbon	75 ohms 1/16W
R72,73	ERJ3GEYJ105	Carbon	1M ohms 1/16W
R74	ERJ3GEYJ750	Carbon	75 ohms 1/16W

REF. NO.	PART NO.	DESCRIPTION	
R75 77	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R78	ERJ3GEYJ151	Carbon	150 ohms 1/16W
R80	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R81	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R82	ERJ3GEYJ123	Carbon	12K ohms 1/16W
R83	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R85,87	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R88	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R89	ERJ3GEYJ511	Carbon	510 ohms 1/16W
R90	ERJ3GEYJ183	Carbon	18K ohms 1/16W
R91	YWR0816P912D	Metal	9.1K ohms 1/16W
R92	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R93	ERJ3GEYJ152	Carbon	1.5K ohms 1/16W
R94	ERJ3GEYJ821	Carbon	820 ohms 1/16W
R95	YWR0816R363D	Metal	36K ohms 1/16W
R96	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R97	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R98	ERJ3GEYJ512	Carbon	5.1K ohms 1/16W
R100	ERJ3GEYJ100	Carbon	10 ohms 1/16W
R101	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R102,103	ERJ3GEYJ392	Carbon	3.9K ohms 1/16W
R104	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R105	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R106	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R107	ERJ3GEYJ273	Carbon	27K ohms 1/16W
R108	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R109	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R110	ERJ3GEYJ623	Carbon	62K ohms 1/16W
R111	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R112	ERJ3GEYJ392	Carbon	3.9K ohms 1/16W
R113	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R114	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R115	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R116	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R117	ERJ3GEYJ620	Carbon	62 ohms 1/16W
R118	ERJ3GEYJ100	Carbon	10 ohms 1/16W
R119	ERJ3GEYJ562	Carbon	5.6K ohms 1/16W
R120	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R121	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R122,123	ERJ3GEYJ562	Carbon	5.6K ohms 1/16W
R125	ERJ3GEYJ100	Carbon	10 ohms 1/16W
R126,127	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R129	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R130	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R132,134	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R135	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R136	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R137	ERJ3GEYJ471	Carbon	470 ohms 1/16W
R138	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R139	ERJ3GEYJ512	Carbon	5.1K ohms 1/16W
R140	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R141,142	ERJ3GEYJ682	Carbon	6.8K ohms 1/16W
R143,144	ERJ3GEYJ162	Carbon	1.6K ohms 1/16W
R145	ERJ6GEYJ161	Carbon	160 ohms 1/10W
R146	ERJ6GEYJ511	Carbon	510 ohms 1/10W

REF. NO.	PART NO.	DESCRIPTION	
R148	ERJ6GEYJ120	Carbon	12 ohms 1/16W
R149	ERJ6GEYJ102	Carbon	1K ohms 1/10W
R150	ERJ6GEYJ911	Carbon	910 ohms 1/10W
R151,152	ERJ6GEYJ201	Carbon	200 ohms 1/10W
R153	ERJ3GEYJ123	Carbon	12K ohms 1/16W
R154	YWR0816P242D	Metal	2.4K ohms 1/16W
R155	YWR0816P302D	Metal	3K ohms 1/16W
R156	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R160-162	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R301,302	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R500	ERDS2TJ103	Carbon	10K ohms 1/4W
VR1,2	EVM7JGA30BQ4	Variable Resistor	
C1	YW5X103K5VB	Ceramic	0.01 µF
C2-5	MCUV1E104ZFV	Ceramic	0.1 µF
C8,10	MCUV1H102KBV	Ceramic	µF
C11,13	MCUV1E104ZFV	Ceramic	0.1 µF
C14	MCUV1E104ZFV	Ceramic	0.1 µF
C15	YW5F473Z5VB	Ceramic	0.047 µF
C16	MCUV1E104ZFV	Ceramic	0.1 µF
C17	YW5X222K5VB	Ceramic	2200 pF
C18,19	MCUV1H470JCV	Ceramic	47 pF
C20	YW5X223K2VB	Ceramic	0.022 µF
C21	YW5X392K5VB	Ceramic	3900 pF
C22	YW5CH220J5VB	Ceramic	22 pF
C23	YW5CH100D5VB	Ceramic	10 pF
C25	YW5CH910J5VB	Ceramic	91 pF
C26	YW5CH100D5VB	Ceramic	10 pF
C28	MCUV1E104ZFV	Ceramic	0.1 µF
C29	YW5CH910J5VB	Ceramic	91 pF
C30	MCUV1H470JCV	Ceramic	47 pF
C31,32	MCUV1E104ZFV	Ceramic	0.1 µF
C36	YW5X104K1VB	Ceramic	0.1 µF
C37	MCUV1E104ZFV	Ceramic	0.1 µF
C38	YW5CH220J5VB	Ceramic	22 pF
C39	MCUV1E104ZFV	Ceramic	0.1 µF
C40-42	MCUV1E104ZFV	Ceramic	0.1 µF
C43	YW5CH471J5VB	Ceramic	470 pF
C44-48	MCUV1E104ZFV	Ceramic	0.1 µF
C50	YW5CH101J5VB	Ceramic	100 pF
C51	MCUV1E104ZFV	Ceramic	0.1 µF
C52,53	MCUV1H470JCV	Ceramic	47 pF
C54	YW5CH120J5VB	Ceramic	12 pF
C55	YW426225FZT	Ceramic	2.2 µF
C56	YW426106FZT	Ceramic	10 µF
C57,58	YW426105FZT	Ceramic	1 µF
C59	MCUV1C105KBM	Ceramic	1 µF
C60	ECST1ED226ZR	Electroly	22 µF 25V
C61	YW32Y106F16T	Ceramic	10 µF
C62	YW400105FZ	Ceramic	1 µF
C63	YW400475FZT	Ceramic	4.7 µF
C64	YW400105XKT	Ceramic	1 µF
C65-70	YW400105FZ	Ceramic	1 µF
C71	YF400104FZT	Ceramic	0.1 µF
C73,74	YW400105FZ	Ceramic	1 µF
C75	YW400105XKT	Ceramic	1 µF

REF. NO.	PART NO.	DESCRIPTION	
C76	ECST1AY106ZR	Electroly	10 µF 10V
C77	YW400474XK	Ceramic	0.47 µF
C78	MCUV1E104KBN	Ceramic	0.1 µF
C80	MCUV1C105KBM	Ceramic	1 µF
C81	EEVHB0G221P	Electrolytic	220 µF 4V
C82	SK31V105MRA	Tantalum	1 µF 35V
C83	TAJA105M016	Electrolytic	1 µF 16V
C84	ECST1EX475ZR	Tantalum	4.7 µF 25V
C85	YWSK41A476MC	Tantalum	47 µF 10V
C86	ECST1EY105ZR	Tantalum	1 µF 25V
C87	ECST1CC226ZR	Tantalum	22 µF 16V
C88	YWSK41A476MC	Tantalum	47 µF 10V
C89	ECST1CY225ZR	Tantalum	2.2 µF
C90	ECST0GC107R	Tantalum	100 µF
C91	TAJA105M016	Tantalum	1 µF 16V
C92	YWSK41A476MC	Tantalum	47 µF 10V
C93-95	ECST1AY106ZR	Tantalum	10 µF 10V
C96	TAJA105M016	Tantalum	1 µF 16V
C97,98	ECST1AY106ZR	Tantalum	10 µF 10V
C99	ECST1EC106ZR	Tantalum	10 µF
C100	YW32Y475F25T	Ceramic	4.7 µF
C300,301	YW5CH560J5VB	Ceramic	56 pF
L1-3	YWBLM21B102S	Coil	1000 µH
L4	ELJFC150KB	Coil	15 µH
L6	ELJPC220KF	Coil	22 µH
L7	EIC4EJ010E	Coil	
L8-15	ELJFC8R2MF	Coil	8.2 µH
X1	YWEF0S8004E0	Crystal Oscillator	
X2	YWDX28R375	Crystal Oscillator	
CF1,2	YWH50ACB20T	LC Filter	
CF3	NFM41R00C221	Filter	
CF5	YWCY4W618	Filter	
CN1	YW528081690	16-pin Connector	
CN2	YWM1938	Connector	
CN4	YW522052090	20-pin Connector	
CN5	YW31756316	6-pin Connector	
TP1-3	YWRCT2125TPV	Test- Pin	

REF. NO.	PART NO.	DESCRIPTION	
REAR BOARD for WV-BP330/B,G			
PCB2 (RTL)	YWVBP330KY3A	Printed Circuit BoardAssy	
IC1	YWMB3775PFV	IC	
Q1,2	2SB766A-QR	Transistor	
Q3	2SA1774	Transistor	
D1	YWSC80206L	Diode	
D2	MA8062M	Diode	
D3	YWSC80206L	Diode	
R2,3	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R4	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R5-8	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R9	ERJ3GEYJ750	Carbon	75 ohms 1/16W
R10	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R11	ERJ3GEYJ163	Carbon	16K ohms 1/16W
R13	ERJ3GEYJ682	Carbon	6.8K ohms 1/16W
R14	ERJ3GEYJ561	Carbon	560 ohms 1/16W
R15	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R16	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R18	ERJ3GEYJ561	Carbon	560 ohms 1/16W
R19	ERJ3GEYJ163	Carbon	16K ohms 1/16W
R20	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R21	YW2116182JT	Carbon	1.8K ohms 1/10W
R22	ERJ6GEYJ112	Carbon	1.1K ohms 1/10W
R23	YW2116182JT	Carbon	1.8K ohms 1/10W
R24	ERJ6GEYJ112	Carbon	1.1K ohms 1/10W
R25	YWR0816P622D	Metal	6.2K ohms 1/16W
R26	YWR0816P183D	Metal	18K ohms 1/16W
R27	YWR0816P682D	Metal	6.8K ohms 1/16W
R28	YWR0816P392D	Metal	3.9K ohms 1/16W
VR1,2	YWST4B203	Variable Resistor	20K ohms
C1	YW400105FZ	Ceramic	1 µF
C2	YW5CH331J5VB	Ceramic	330 pF
C3-5	MCUV1E104ZFV	Ceramic	0.1 µF
C6	YW5X103K5VB	Ceramic	0.01 µF
C10	EEFCD0J330R	Semiconductor	33 µF
C11	EEFCD1C4R7R	Semiconductor	4.7 µF
C12	EEFCD0J330R	Semiconductor	33 µF
C13	TAJA105M016	Electrolytic	1 µF 16V
C14	ECST0JY475	Electrolytic	4.7 µF 6.3V
C15	ECST0JY685	Electrolytic	6.8 µF 6.3V
C16	TAJA105M016	Electrolytic	1 µF 16V
L1-3	YWCDR63101KC	Coil	100 µH
SW1	YWKSD06S	Slide Switch	
CN1	YW523962090	20-pin Connector	
CN2	YW533910690	6-pin Connector	
CN3,4	YWP2270	BNC Connector	

REF. NO.	PART NO.	DESCRIPTION	
REAR BOARD for WV-BP332E			
PCB2 (RTL)	YWVBP332KY3A	Printed Circuit Board Assy	
IC1	YWMB3775PFV	IC	
Q1,2	2SB766A-QR	Transistor	
Q3	2SA1774	Transistor	
D1	YWSC80206L	Diode	
D2	MA8062M	Diode	
D3	YWSC80206L	Diode	
R3	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R4	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R5,6	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R8	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R9	ERJ3GEYJ750	Carbon	75 ohms 1/16W
R10	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R11	ERJ3GEYJ163	Carbon	16K ohms 1/16W
R13	ERJ3GEYJ682	Carbon	6.8K ohms 1/16W
R14	ERJ3GEYJ561	Carbon	560 ohms 1/16W
R15	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R16	ERJ3GEY0R00	Carbon	0 ohm 1/16W
R18	ERJ3GEYJ561	Carbon	560 ohms 1/16W
R19	ERJ3GEYJ163	Carbon	16K ohms 1/16W
R20	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R21	YW2116182JT	Carbon	1.8K ohms 1/10W
R22	ERJ6GEYJ112	Carbon	1.1K ohms 1/10W
R23	YW2116182JT	Carbon	1.8K ohms 1/10W
R24	ERJ6GEYJ112	Carbon	1.1K ohms 1/10W
R25	YWR0816P622D	Metal	6.2K ohms 1/16W
R26	YWR0816P183D	Metal	18K ohms 1/16W
R27	YWR0816P682D	Metal	6.8K ohms 1/16W
R28	YWR0816P392D	Metal	3.9K ohms 1/16W
VR2	YWST4B203	Variable Resistor	20K ohms
C1	YW400105FZ	Ceramic	1 µF
C2	YW5CH331J5VB	Ceramic	330 pF
C3-5	MCUV1E104ZFV	Ceramic	0.1 µF
C6	YW5X103K5VB	Ceramic	0.01 µF
C9	MCUV1H222KBN	Ceramic	2200pF
C10	EEFCD0J330R	Semiconductor	33 µF
C11	EEFCD1C4R7R	Semiconductor	4.7 µF
C12	EEFCD0J330R	Semiconductor	33 µF
C13	TAJA105M016	Electrolytic	1 µF 16V
C14	ECST0JY475	Electrolytic	4.7 µF 6.3V
C15	ECST0JY685	Electrolytic	6.8 µF 6.3V
C16	TAJA105M016	Electrolytic	1 µF 16V
L1-3	YWCDR63101KC	Coil	100 µH
SW1	YWKSD05S	Slide Switch	
CN1	YW523962090	20-pin Connector	
CN2	YW533910890	8-pin Connector	
CN3,4	YWP2270	BNC Connector	
E1	YF40S1BYF2P	Terminal	

REF. NO.	PART NO.	DESCRIPTION	
REAR BOARD for WV-BP334E			
PCB2 (RTL)	YWVBP334KY3A	Printed Circuit Board Assy	
IC1	YWMB3775PFV	IC	
Q1,2	2SB766A-QR	Transistor	
Q3	2SA1774	Transistor	
D1	YWSC80206L	Diode	
D2	MA8062M	Diode	
D3	YWSC80206L	Diode	
R2,3	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R4	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R5-8	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R9	ERJ3GEYJ750	Carbon	75 ohms 1/16W
R10	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R11	ERJ3GEYJ163	Carbon	16K ohms 1/16W
R13	ERJ3GEYJ682	Carbon	6.8K ohms 1/16W
R14	ERJ3GEYJ561	Carbon	560 ohms 1/16W
R15	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R16	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R18	ERJ3GEYJ561	Carbon	560 ohms 1/16W
R19	ERJ3GEYJ163	Carbon	16K ohms 1/16W
R20	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R21	YW2116182JT	Carbon	1.8K ohms 1/10W
R22	ERJ6GEYJ112	Carbon	1.1K ohms 1/10W
R23	YW2116182JT	Carbon	1.8K ohms 1/10W
R24	ERJ6GEYJ112	Carbon	1.1K ohms 1/10W
R25	YWR0816P622D	Metal	6.2K ohms 1/16W
R26	YWR0816P183D	Metal	18K ohms 1/16W
R27	YWR0816P682D	Metal	6.8K ohms 1/16W
R28	YWR0816P392D	Metal	3.9K ohms 1/16W
VR1,2	YWST4B203	Variable Resistor	20K ohms
C1	YW400105FZ	Ceramic	1 µF
C2	YW5CH331J5VB	Ceramic	330 pF
C3-5	MCUV1E104ZFV	Ceramic	0.1 µF
C6	YW5X103K5VB	Ceramic	0.01 µF
C7,8	ECUV1H103KBN	Ceramic	0.01 µF
C9	MCUV1E104KBN	Ceramic	0.1 µF
C10	EEFCD0J330R	Semiconductor	0.01 µF
C11	EEFCD1C4R7R	Semiconductor	4.7 µF
C12	EEFCD0J330R	Semiconductor	33 µF
C13	TAJA105M016	Electrolytic	1 µF 16V
C14	ECST0JY475	Electrolytic	4.7 µF 6.3V
C15	ECST0JY685	Electrolytic	6.8 µF 6.3V
C16	TAJA105M016	Electrolytic	1 µF 16V
L1-3	YWCDR63101KC	Coil100 µH	
SW1	YWKSD06S	Slide Switch	
CN1	YW523962090	20-pin Connector	
CN2	YW533910890	8-pin Connector	
CN3,4	YWP2270	BNC Connector	
F1,2 ⚠	YWSSFC4AT4	Current Fuse	
E1	YF40S1BYF2P	Terminal	

REF. NO.	PART NO.	DESCRIPTION	
POWER BOARD for WV-BP330/B,G			
PCB3 (RTL)	YWVBP10EKY4A	Printed Circuit Board Assy	
Q1	2SC2412K-T46	Transister	
Q2 ⚠	YWPC123FY2	Photo Coupler	
Q3 ⚠	YWPC123FY2	Photo Coupler	
Q4	2SC2411	Transistor	
Q5	2SC3866	Transistor	
Q6	2SC2411	Transistor	
Q11	2SC2412K-T46	Transister	
VS1 ⚠	YWJ07N471KP	ZNR	
D1 ⚠	YWKBP205	Diode	
D2	YWERA34-10	Diode	
D6	DAP202KT7	Diode	
D7	YWUDZ6.2B	Diode	
D8	DAP202KT7	Diode	
D11	YWSC80206L	Diode	
D12	YWMTZJ10C	Diode	
D13	YWUDZ6.2B	Diode	
D14	YWSC80206L	Diode	
D15	YWMTZJ10C	Diode	
R1-3	ERJ6GEYJ224	Carbon	220K ohms 1/16W
R4	ERG2SJ683	Metal	68K ohms 2W
R5,6	ERJ14YJ913	Carbon	91K ohms 1/16W
R7	ERJ6GEYJ363	Carbon	36K ohms 1/10W
R8	ERJ6GEYJ472	Carbon	4.7K ohms 1/16W
R9	ERJ6GEYJ392	Carbon	3.9K ohms 1/16W
R10	ERJ6GEYJ471	Carbon	470 ohms 1/16W
R11	ERJ6GEYJ221	Carbon	220 ohms 1/10W
R12	ERJ6GEYJ471	Carbon	470 ohms 1/16W
R13	ERJ6GEYJ392	Carbon	3.9K ohms 1/16W
R14	ERJ6GEYJ471	Carbon	470 ohms 1/16W
R15	ERJ6GEYJ472	Carbon	4.7K ohms 1/16W
R16,17	ERJ14YJ680	Carbon	68 ohms 1/4W
R18	ERJ6GEYJ4R7V	Carbon	4.7 ohms 1/16W
R19	ERJ6GEYJ101	Carbon	100 ohms 1/16W
R20	ERJ14YK7R5	Carbon	7.5 ohms 1/4W
R21	ERJ6GEYJ221	Carbon	220 ohms 1/10W
R22	ERJ6GEYJ102	Carbon	1K ohms 1/10W
R23	YWR1220P102D	Metal	1K ohms
R24	ERJ6GEY0R00	Carbon	0 ohm 1/10W
R25	YWR1220P302D	Metal	3K ohms
R26	ERJ6GEYJ103	Carbon	10K ohms 1/10W
C1 ⚠	YWX75M333VS0	Plastic	0.033 µF
C3	RJ3400V100M	Electrolytic	10 µF
C4	YWBM8182KH	Ceramic	1800 pF
C5	MCUV1E104KBN	Ceramic	0.1 µF
C6	YW400105FZ	Ceramic	1 µF
C7	MCUV1H822KBN	Ceramic	8200 pF
C8	ECQV1H473JL	Plastic	0.47 µF 50V
C11	ECA1CFQ391	Electrolytic	390 µF 16V
C12	YWRJJ1C121F3	Electrolytic	120 µF

REF. NO.	PART NO.	DESCRIPTION
C13	MCUV1H222KBN	Ceramic 2200 pF
C14,15	YW12FY222ML7	Ceramic 2200 pF
L1 ⚠	YWSU9V01100	Coil
L11	YWSL675330	Coil
T1 ⚠	YWPC19HWA230	Power Transformer
CN1	YWB2P3VH	3-pin Connector
CN2	YW526630610	Connector
F1 ⚠	XBA2C05ET0A	Current Fuse 0.5A 250V
E1,2 ⚠	S-N5057	Fuse Holder
E3 ⚠	YW851040	Insulator Cap
F102 ⚠	YW840522	Fuse Insulator Cap
M39	YWV1KA0181A4	Washer

POWER BOARD for WV-BP332E

PCB3 (RTL)	YWVKYCP62P3A	Printed Circuit Board Assy
IC1	AN7809R	IC
D2	MA736	Diode
R1	ERJ8GCS0R00	Carbon 0 ohms 1/16W
C1	MCUV1E104ZFV	Ceramic 0.1 µF
C6	ECA1CFQ560	Electroly 56 µF 16V
C9	ECA1CFQ560	Electroly 56 µF 16V
CN1	YW526630810	Connector
F1 ⚠	SSFR800F003	Current Fuse
E1 ⚠	YFN074A	Insulator
M39	YWV1KA0181A4	Washer
M40	YWV7DA0382A4	Heat Sink

POWER BOARD for WV-BP334E

PCB3 (RTL)	YWVCP24PKY4A	Printed Circuit Board Assy
Q1	MJE13004	Transistor
Q2 ⚠	YWPS2501-1KA	Transistor
Q3 ⚠	YWPS2501-1KA	Transistor
Q4	2SC2411	Transistor
Q11	2SC2412K-T46	Transister
D1 ⚠	YWKBP202	Diode
D6	DAP202KT7	Diode
D7	YWUDZ4.3BT7	Diode
D8	DAP202KT7	Diode

REF. NO.	PART NO.	DESCRIPTION
D11	YWSC80206L	Diode
D12	YWMTZJ10C	Diode
D13	YWUDZ6.2B	Diode
D14	YWSC80206L	Diode
D15	YWMTZJ10C	Diode
VS1 ⚠	YWJ07N221KP	ZNR
R1	ERJ6GEYJ333	Carbon 33K ohms 1/10W
R3,4	ERJ14YJ112	Carbon 1.1K ohms 1/10W
R5	ERJ6GEYJ152	Carbon 1.5K ohms 1/10W
R7	ERJ6GEYJ682	Carbon 6.8K ohms 1/10W
R10	ERJ6GEYJ222	Carbon 2.2K ohms 1/10W
R11,12	ERJ14YJ270	Carbon 27 ohms 1/10W
R13	ERJ14YJ101	Carbon 100 ohms 1/10W
R15	ERJ6GEYJ221	Carbon 220 ohms 1/10W
R16	ERJ6GEYJ102	Carbon 1K ohms 1/10W
R17	YWR1220P102D	Metal 1K ohms
R18	ERJ6CEY0R00	Carbon 0 ohm 1/10W
R19	YWR1220P302D	Metal 3K ohms
R20	ERJ6GEYJ103	Carbon 10K ohms 1/10W
C1 ⚠	ECQV1334JM	Plastic 0.33 µF
C3	YWRJ350V471	Electrolytic 470 µF 350V
C5,6	YW400105FZ	Ceramic 1 µF
C7	ECUV1H103KBN	Ceramic 0.01 µF
C8	ECQV1H104JL	Plastic 0.1 µF 50V
C9	YWBM6681KH	Ceramic 680 pF
C11	ECA1CFQ391	Electrolytic 390 µF 16V
C12	YWRJJ1C121F3	Electrolytic 120 µF 16V
C13	MCUV1H562KBN	Ceramic 5600 pF
C14	ECQM1103KZ	Ceramic 0.01 µF
L1 ⚠	YWSU10H07040	Coil
L11	YWSL675330	Coil
T1 ⚠	YWPC19HWA24	Power Transformer
CN1	YW526630810	8-pin Connector
F1 ⚠	XBA2C20ET0A	Current Fuse 2A 250V
E1,2 ⚠	S-N5057	Fuse Holder
E3 ⚠	YW840522	Insulator Cap
M39	YWV1KA0181A4	Washer

ACCESSORY PARTS / PACKAGING PARTS

CN110	YFE4191J100	ALC Lens Connector
M51 ⚠	YWV8QA4917BN	Operating Instructions
M52	YWT050803	Polyethylene Bag
M53	YWT20X35C03	Polyethylene Bag
M55	YWV9CA3774AN	Packaging Assy forWV-BP330/B
	YWV9CA3775AN	Packaging Assy forWV-BP330/G
	YWV9CA3776AN	Packaging Assy for WV-BP334E
	YWV9CA3777AN	Packaging Assy for WV-BP332E
M56	YWV7SA2037A3	Barcord Label

Printed in Japan
C-674 Ⓝ 5, 7, 23